

The Effect of Health Promotion on Disease Prevention

Pham Trong Khang Ha^{1*}, Van Duong Ha²

¹ Faculty of Medicine, University of Medicine Pham Ngoc Thach, Ho Chi Minh City, Vietnam.

² Research and Development Center, Safainco; Institute of Economics and Technology, Ho Chi Minh City, Vietnam

E mail: ¹ khangha.pt@gmail.com ; ² dhv05@yahoo.com

ABSTRACT

Today, the focus on the health promotion and disease prevention is stronger than ever been. Many diseases, especially chronic noncommunicable diseases are the main cause of the death and disability. Nevertheless, the main risk factors associated with chronic diseases are largely preventable by the health promotion. This was provided compelling evidence that addressing those risk factors is an efficient performance of the management policy, patient assessment, patient information and intervention, promoting a healthy workplace, and continuity and cooperation. In other words, these are the factors that have positive impacts on the disease prevention. This study aimed to evaluate the effect of health promotion on disease prevention. This study is based on the definition of health promotion and used the five dimensions theory of health promotion, the standards for health promotion in hospitals, and make some adjustments in the context of the health care providers. The scale was appropriately designed to be applicable in many health care contexts, with a particular focus on health care in the context of the rapidly growing private health facilities (PHFs) in Vietnam. The study found that the management policy, patient assessment, patient information and intervention, promoting a healthy workplace, and continuity and cooperation had positive effects on the disease prevention. The results of this study are an important foundation to propose policy measures to advance the health promotion, and contribute the disease prevention at the HCPs in Vietnam.

Keywords: Diseases prevention, health promotion, patient assessment, patient information and intervention, promoting a healthy workplace, continuity and cooperation.

1. INTRODUCTION

The health promotion is an essential and important area, enables people to increase control over their health. It is considered as one of the significant factors to keep people safe that is designed to benefit and protect individual people's health, prevent disease, ensure healthy and improve their quality of life. The PHFs in Vietnam are growing fast, and have the high growth potential to meet the need for health care service of the people. However, many PHFs are still small and public acceptance and the reputation is still limited. Many people have not yet choice to use PHFs as they are substantial concerns with the quality of services and human resource, the equipment, and the role of the PHFs in the health promotion is not clear to contribute the disease prevention.

The main objective of this study is to examine the effect of health promotion on the disease prevention. There is very little research that related to this topic in Vietnam context; there has not been research specifically on the effect of health promotion on the disease prevention. This study has opened up a new research trend, and contributed in limited literature by applying quantitative research. Through the PHFs' client survey in 2021, the data is collected, analyzed by statistical technique and tools like descriptive statistics, correlation method, and empirical methodology. This study has evaluated and developed an in-depth analysis of the health promotion, the disease prevention and an econometric analysis on the effect of health promotion on the disease prevention.

Many PHFs need a significant improvement for management policy, patient assessment, patient information and intervention, promoting a healthy workplace, continuity and cooperation. So, examination the effect of health promotion on the disease prevention should be taken. By this examination, the PHFs can be accept their role in the health promotion is clear to contribute the disease prevention.

2. MATERIAL AND METHODS

The disease prevention

Disease prevention defined as measures to prevent the occurrence of the disease, the risk factor reduction, arrests its progress and reduce its consequences once established. This is an essential component of public health, and the disease prevention is usually defined as a primary disease prevention which prevents diseases from occurring, the secondary prevention which detects the disease at an early stage and prevents the disease from developing, and the tertiary prevention or the rehabilitation which prevents the aggravation or the recurrence of the disease and secures the maintenance of the functional level ¹.

Disease prevention focuses on specific efforts aimed at reducing the development and a severity of diseases. Disease prevention often addresses social determinants of health, which influence modifiable risk behaviors. Social determinants of health are the economic, social, cultural, and political conditions in which people are born, grow, and live that affect the health status. Typical activities for the disease prevention include the communication strategies contribute to raise awareness about healthy behaviors for the public; the health education strategies include courses, trainings, and support groups that contribute to empower the behavior change and actions; the policy, systems, and the environment makes systematic changes through improved laws, rules, and regulations, the policy, and the economic, social, or physical environment to encourage, makes available, and enables healthy choices. Over the time, the definition of the prevention has expanded so that its meaning in many contexts of health services. The conceptualization of the prevention would consider the population orientation; the population-attributable risk rather than the individual risk; the morbidity burden rather than the disease burden; the tandem estimation of the benefits, and costs of the strategy to improve both population health, and the distribution of health within populations; improving overall health rather than the disease prevention as a major goal; avoiding the past overestimation of the utility of individual risk factors in causing ill health in populations, even those addressing genetic predispositions ².

The health promotion concept and dimensions

Health promotion is defined as the process of enabling people to increase control and to improve their health. It includes health education, disease prevention and rehabilitation services; health promotion by empowering patients, relatives, and staff to improve their physical, mental and social well-being ².

Health promotion has been an essential part of work in the PHFs, however, the increasing prevalence of the lifestyle-related and many diseases require more expanded the scope and the systematic provision of activities such as the therapeutic education, effective communication strategies to enable patients to take an active role in the disease-management or the motivational counselling. In addition, the PHFs impact on health not only through the provision of the prevention, the treatment, and rehabilitation services of the high quality, but also through their impact on the local environment and local economy through partnerships with the community. Health promotion is a core quality issue in the PHFs to improve health and sustaining quality of life. Standards for health promotion in the PHFs are necessary to ensure the quality of services provided in health care services. As a result, five core dimensions applicable to all PHFs have been

developed in accordance with requirements of the management policy, patient assessment, patient information and intervention, promoting a healthy workplace, and continuity and cooperation ². In this study, we use the five dimensions theory of the health promotion of Starfield et al. (2008), and the scale was designed to be applicable in multiple health care contexts. A brief explanation of all these dimensions, and the measurement of these variables are presented in the Table 1.

Table I The dimensions of health promotion

Dimension	Description	Specific Illustrative Criteria
Management policy	The PHFs has a written policy for health promotion. The policy must be implemented as part of the overall organization quality system and is aiming to improve health outcomes, and this policy is aimed at patients, relatives and staff.	To describe the framework for the PHFs' activities concerning health promotion as an integral part of the PHFs' quality management system
Patient assessment	The PHFs' obligation to ensure the assessment of the patients' needs for health promotion, disease prevention and rehabilitation.	The PHFs' ensure that health professionals, in partnership with patients, systematically assess needs for health promotion activities.
Patient information and intervention	The PHFs must provide the patient with information on significant factors concerning their disease or health condition and health promotion interventions should be established in all patients' pathways.	The PHFs ensure that the patient is informed about planned activities, to empower the patient in an active partnership in planned activities and to facilitate integration of health promotion activities in all patient pathways.
Promoting a healthy workplace	The PHFs ensure that the management establish conditions for the development as a healthy workplace.	The PHFs ensure to support the establishment of a healthy and safe workplace, and to support health promotion activities for staff.
Continuity and cooperation	The PHFs ensure a planned approach to collaboration with other PHFs and institutions.	The PHFs ensure collaboration with relevant providers and to initiate partnerships to optimise the integration of health promotion activities in patient pathways.

Source: Starfield et al. (2008)

Research Methodology

The effect of health promotion on disease prevention was significant in the PHFs. The disease prevention is affected by the health promotion through the factors that are management policy, patient assessment, patient information and intervention, promoting a healthy workplace, and continuity and cooperation. They are five independent variables, and dependent variable is the disease prevention. The scales could be applied to health promotion as well as the contexts of PHFs as can be seen in Table 2.

Table II Independent and dependent variables in the research

No.	Code	Item
Management policy		
1	Mp1	The PHFs identify responsibilities for the process of implementation, evaluation and regular review of their policy.

2	Mp2	The PHFs allocates resources to the processes of implementation, evaluation and regular review of their policy.
3	Mp3	The health workers are aware of the health promotion policy and it is included in induction programmes for new health workers.
4	Mp4	The PHFs ensure the availability of procedures for collection and evaluation of data in order to monitor the quality of health promotion activities.
5	Mp5	The PHFs ensure that the health workers have relevant competences to perform health promotion activities and supports the acquisition of further competences as required.
6	Mp6	The PHFs ensure the availability of the necessary infrastructure, including resources, space, equipment, etc. in order to implement health promotion activities.
Patient assessment		
7	Pa1	The PHFs ensure the availability of procedures for all patients to assess the need for health promotion.
8	Pa2	The PHFs ensure procedures to assess specific needs for health promotion for diagnosis-related patient-groups.
9	Pa3	The assessment of a patient's need for health promotion is done at first contact with the hospital, and adjusted as necessary.
10	Pa4	The patients' needs assessment ensures awareness of and sensitivity to social and cultural background.
11	Pa5	Information provided by the other health care providers is used in the identification of patient needs.
Patient information and intervention		
12	Pi1	The patients are informed of factors impacting on their health and, in partnership with the patient, a plan for relevant activities for health promotion is agreed.
13	Pi2	The PHFs gave clear, understandable and appropriate information about their actual condition, treatment, care and factors influencing the patients' health.
14	Pi3	The PHFs ensure that health promotion is systematically offered to all patients based on assessed needs.
15	Pi4	The PHFs ensure that information given to the patient, and health promoting activities are documented and evaluated, including expected and planned results have been achieved.
16	Pi5	The PHFs ensure that all patients, staff and visitors have access to general information on factors influencing health.
Promoting a healthy workplace		
17	Ph1	The PHFs ensure the establishment and implementation of a comprehensive human resource strategy that includes the development and training of staff in health promotion skills.
18	Ph2	The PHFs ensure the establishment and implementation of a policy for a healthy and safe workplace providing occupational health for staff.
19	Ph3	The PHFs ensure the involvement of staff in decisions impacting on the staff's working environment.
20	Ph4	The PHFs ensure availability of procedures to develop and maintain staff

		awareness on health issues.
Continuity and cooperation		
21	Cc1	The PHFs ensure that health promotion services are coherent with current provisions and health plans.
22	Cc2	The PHFs identify and cooperates with existing health and social care providers and related organizations and groups in the community.
23	Cc3	The PHFs ensure the availability and implementation of activities and procedures after patient discharge during the post-hospitalisation period.
24	Cc4	The PHFs ensure that documentation and patient information is communicated to the relevant recipient or follow-up partners in patient care and rehabilitation.
Prevention of disease		
25	Pd1	The PHFs ensure primary prevention which prevents disease from occurring.
26	Pd2	The PHFs ensure secondary prevention which identifies disease at an early stage and prevents it from developing.
27	Pd3	The PHFs ensure tertiary prevention which prevents worsening or recurrence of symptoms and secures maintenance of functional level.

Source: Own study and Starfield et al. (2008)

The case study is conducted in 2021, and the data which collected from the clients of PHFs in Vietnam. This is the meta-analysis that provides an empirical estimate of the association between disease prevention and health promotion. This study employed a quantitative approach to data collection with the aid of close ended questionnaires using 5-point Likert scale questionnaire to measure the variables in which there are 5 levels of impact on disease prevention, 1 is lowest (strongly disagree) and 5 is highest (strongly agree). The questionnaire included age range, gender, income range, education level, and residency of clients in the first part, and information on the independent variable, health promotion, and questions regarding disease prevention in the second section. The method of random sampling was used with the population of the study constituted clients in the PHFs. This study used a scientifically tested tool such as Stata 15.0 to analyzed primary data collected. The analyses included 1152 participants from the PHFs (out of 1200 sampled) clients. Those 1152 responses that collected 96 clients from younger than 18 years, 328 clients from 18-30 years old, clients 316 from 30-45 years old, 226 clients from 45-60 years old, 186 clients from older than 60 years old. An appropriate determination of the sample size is very important part in the design of a study. An alternative method of sample size calculation for multiple regression as: $N > 50 + 8p$ where p was the number of predictors. Accordingly, a sample of $> 50 + 8 \times 24 = 242$ participants, therefore a sample of 1152 should be sufficient in this study. The sample size required to test the hypothesis that the population multiple correlation was zero with a Power of 0.80 (Alpha = 0.05) ³. Exploratory factor analysis is one of the most widely used statistical methods in quantitative research, and it is generally performed with suitable sample sizes. Sample size guideline for exploratory factor analysis was long established that the least sample's size is 50, better if being more than 100 as well as the ratio of a number of observations on a number of items is 5, that means each item requiring at least 5 observations, the best ratio is more than 10. In order to implement the exploratory factor analysis, it is necessary to scrutinize the matrix of correlation indexes, and if the correlations are less than 0.3, using the exploratory factor analysis will be probably inconsequential ⁴. Another instruction supposed that factorability resulted in less than 0.3, this could be a clue that exploratory factor analysis might not be the appropriate statistical method ⁵.

A research model was designed to measure health promotion with dimensions were measured using 24 items. These dimensions and the range of items include: Management policy: 6 items; patient assessment: 5 items; patient information and intervention: 5 items; promoting a healthy workplace: 4 items; continuity and cooperation: 4 items. Stata 15.0 software will be used for evaluate the quality of scale, reliability analysis with Cronbach's Alpha, analyze the exploratory factors, matrix rotation, test the appropriateness of the model. The correlation coefficient can range between - 1.0 and 1.0. A correlation coefficient of 1.0 in a research study indicates a perfect correlation between the study variables, means that the relationship between the variables is very strong, and means that changes in the independent item will result in an identical change in the dependent item. A strong negative correlation with value of -1 indicated a perfect negative correlation, means that changes in the independent item will result in an identical change in the dependent item, but the change will be in the opposite direction. Correlation coefficients were between 0.9 and 1.0 indicates very highly correlated. Correlation coefficients are between 0.7 and 0.9 considers highly correlated. Correlation coefficients are between 0.5 and 0.7 shows moderately correlated. Correlation coefficients are between 0.3 and 0.5 indicates a low correlation. Correlation coefficients are less than 0.3 shows a little correlation, and a coefficient of zero means there is no relationship between the two items and that a change in the independent item will have no effect in the dependent item. The reliability measure of a multi-item scale is a tool to improve those scales, and is called total correlation coefficient ⁶. Cronbach's alpha coefficient is a tool to measure an underlying construct for every item. It ranges in value from 0 to 1 and may be used to describe the reliability of factors. It was more than 0.60 indicated statistically reliable, an acceptable level of confidence indicated a Cronbach's alpha coefficient of 0.6 - 0.7, and it is 0.8 or higher was very good ⁷. The regression equation for this study is as follows.

$$y_i = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \beta_4 x_4 + \beta_5 x_5$$

Where,

y is the dependent variable, disease prevention. $x_1, x_2, x_3, x_4,$ and x_5 are the independent variables. β_0 is the intercept term, it gives the mean or variables excluded average effect on y of all the form the equation and its mechanical interpretation is the average value of y when variables $\beta_1, \beta_2, \beta_3, \beta_4,$ and β_5 are set equal to zero. Variables $\beta_1, \beta_2, \beta_3, \beta_4,$ and β_5 refer to the coefficient of respective independent variable which measures the change in the mean value of y, per unit change in their respective independent variables.

3. RESULTS

Demographic profile of the clients and item reliability test

The clients of PHFs have quite diverse characteristics. There are 1152 respondents that the majority of them was female gender with 63.02%, married with 71,70%, age ranges from 16 to 65. The respondents' education in showed that 8.33% are in a high school, 73.78% of them graduated from college, and the rest have intermediate degrees. The respondents' income having a moderate income with 65.10%, and the respondent's residence were in many provinces and cities nationwide.

Cronbach's alpha coefficient was used to determine internal consistency of the scale. The result estimated the variables with alpha coefficients were greater than 0.3 and total correlation coefficients were greater than 0.6. The scales of this study were qualified to perform exploratory factor analysis as can be seen in Table 3.

Table III Item reliability test

Item	Obs	Sign	Item-test correlation	Item-rest correlation	Average interitem covariance	Alpha
------	-----	------	-----------------------	-----------------------	------------------------------	-------

Management policy						
Mp1	1152	+	0.6285	0.4701	.1503858	0.7463
Mp2	1152	+	0.5849	0.3675	.1529957	0.7751
Mp3	1152	+	0.7101	0.5354	.1315991	0.7297
Mp4	1152	+	0.7673	0.6273	.1239475	0.7044
Mp5	1152	+	0.7013	0.5495	.1372702	0.7266
Mp6	1152	+	0.7063	0.5519	.1357024	0.7256
Test scale					.1386501	0.7694
Patient assessment						
Pa1	1152	+	0.7353	0.5719	.1207268	0.7083
Pa2	1152	+	0.7096	0.5251	.123874	0.7235
Pa3	1152	+	0.7552	0.5668	.112079	0.7088
Pa4	1152	+	0.6819	0.4894	.1292666	0.7356
Pa5	1152	+	0.7040	0.5128	.1244226	0.7278
Test scale					.1220738	0.7637
Patient information and intervention						
Pi1	1152	+	0.7955	0.6404	.4461415	0.7393
Pi2	1152	+	0.7513	0.5561	.4717012	0.7716
Pi3	1152	+	0.7192	0.5661	.5265999	0.7647
Pi4	1152	+	0.7235	0.5729	.5247346	0.7629
Pi5	1152	+	0.7389	0.5837	.5065388	0.7587
Test scale					.4951432	0.7980
Promoting a healthy workplace						
Ph1	1152	+	0.8127	0.6210	.2533179	0.6595
Ph2	1152	+	0.6662	0.4476	.3632731	0.7514
Ph3	1152	+	0.8225	0.6472	.2493253	0.6443
Ph4	1152	+	0.7293	0.5044	.3165087	0.7253
Test scale						
Continuity and cooperation						
Cc1	1152	+	0.7586	0.5436	.1841314	0.7400
Cc2	1152	+	0.8463	0.6602	.1408289	0.6778
Cc3	1152	+	0.8098	0.6657	.1744229	0.6832
Cc4	1152	+	0.6799	0.4754	.2208808	0.7698
Test scale					.180066	0.7752
Prevention of disease						
Pd1	1152	+	0.8369	0.5993	.2140424	0.6454
Pd2	1152	+	0.7884	0.5612	.2712979	0.6922
Pd3	1152	+	0.8273	0.5844	.2253898	0.6631
Test scale					.23691	0.7514

Source: Authors' calculation from Stata 15.0

Exploratory factor analysis

The results of exploratory factor analysis for independent variables showed that number of observations = 1,152; Rotation: (unrotated); Method: principal-component factors; Retained factors = 5; Number of params = 110. The results of exploratory factor analysis for independent

variables showed there were fifteen factors (Retained factors = 5). The factor that its eigenvalue was smallest and greater than 1 is factor5 (Eigenvalue = 1.52050), and there were fifteen factors that were define in the mode. The results of exploratory factor analysis for dependent variable showed that number of observations = 1152; Method: principal-component factors; Rotation: (unrotated); Retained factors = 1; Number of params = 3. The results of exploratory factor analysis for dependent variables show there is one factor (Retained factors = 1). The factor that its eigenvalue was smallest and greater than 1 was factor1 (Eigenvalue = 2.00744), and there was one factor that is define in the model as can be seen in Table 4.

Table IV Exploratory factor analysis

Factor	Eigenvalue	Difference	Proportion	Cumulative
Exploratory factor analysis for independent variables				
Factor1	4.10528	0.97664	0.1711	0.1711
Factor2	3.12864	0.49800	0.1304	0.3014
Factor3	2.63064	0.74691	0.1096	0.4110
Factor4	1.88373	0.36323	0.0785	0.4895
Factor5	1.52050	0.58817	0.0634	0.5529
Factor6	0.93233	0.02151	0.0388	0.5917
Factor7	0.91082	0.09865	0.0380	0.6297
Factor8	0.81217	0.02508	0.0338	0.6635
Factor9	0.78709	0.01908	0.0328	0.6963
Factor10	0.76801	0.05989	0.0320	0.7283
Factor11	0.70812	0.06515	0.0295	0.7578
Factor12	0.64297	0.02559	0.0268	0.7846
Factor13	0.61737	0.02364	0.0257	0.8103
Factor14	0.59373	0.05226	0.0247	0.8351
Factor15	0.54147	0.03717	0.0226	0.8576
Factor16	0.50430	0.02320	0.0210	0.8786
Factor17	0.48110	0.05840	0.0200	0.8987
Factor18	0.42270	0.03228	0.0176	0.9163
Factor19	0.39041	0.00967	0.0163	0.9326
Factor20	0.38074	0.02300	0.0159	0.9484
Factor21	0.35774	0.03714	0.0149	0.9633
Factor22	0.32061	0.03631	0.0134	0.9767
Factor23	0.28429	0.00905	0.0118	0.9885
Factor24	0.27524	.	0.0115	1.0000
LR test: independent vs. saturated: $\chi^2(276) = 8691.81$ Prob> $\chi^2 = 0.0000$				
Exploratory factor analysis for dependent variables				
Factor1	2.00744	1.48291	0.6691	0.6691

Factor2	0.52453	0.05650	0.1748	0.8440
Factor3		.		
Factor4	0.46803		0.156	1.0000
LR test: independent vs. saturated: $\chi^2(3) = 813.87$ Prob> $\chi^2 = 0.0000$				

Source: Authors' calculation from Stata 15.0

The study conducted to rotate the matrix to determine the factors in the model. After rotate, varimax blanks for independent variables showed that five factors and cumulative coefficient reach 0.5529, that was greater than 0.05. At the same time, rotate, varimax blanks for dependent variable found that one factor and cumulative coefficient reach 0.6691, that was greater than 0.05. The results showed there were no new factors are explored other than the initial factors of the model as shown in Table 5.

Table V Rotate, varimax blanks

Factor	Variance	Difference	Proportion	Cumulative
Rotate, varimax blanks for independent variables				
Factor1	2.90235	0.04923	0.1209	0.1209
Factor2	2.85312	0.21673	0.1189	0.2398
Factor3	2.63639	0.18877	0.1098	0.3497
Factor4	2.44762	0.01832	0.1020	0.4516
Factor5	2.42930	.	0.1012	0.5529
LR test: independent vs. saturated: $\chi^2(276) = 8691.81$ Prob> $\chi^2 = 0.0000$				
Rotate, varimax blanks for dependent variables				
Factor1	2.00744	.	0.6691	0.6691
LR test: independent vs. saturated: $\chi^2(3) = 813.87$ Prob> $\chi^2 = 0.0000$				

Source: Authors' calculation from Stata 15.0

Rotated factor loadings (pattern matrix) and unique variances for independent variables find out Management policy (x_1) is Factor1, Patient information and intervention (x_2) is Factor2, Patient assessment (x_3) is Factor3, Promoting a healthy workplace (x_4) is Factor4, Continuity and cooperation. Rotated factor loadings (pattern matrix) and unique variances for dependent variables show that Factor1 is disease prevention (y) as shown in Table 6.

Table VI Rotated factor loadings and unique variances

Variable	Factor1	Factor2	Factor3	Factor4	Factor5	Uniqueness
Rotated factor loadings (pattern matrix) and unique variances for independent variables						
Mp1	0.5907					0.5802
Mp2	0.5330					0.7095
Mp3	0.7122					0.4746
Mp4	0.7781					0.3642
Mp5	0.7092					0.4716
Mp6	0.7289					0.4500
Pa1			0.7299			0.4385
Pa2			0.7315			0.4439
Pa3			0.7306			0.4140
Pa4			0.6051			0.5362

Pa5			0.6902			0.5041
Pi1		0.7728				0.3679
Pi2		0.6608				0.4909
Pi3		0.7523				0.4279
Pi4		0.7053				0.4394
Pi5		0.7437				0.4325
Ph1				0.7617		0.3395
Ph2				0.6669		0.5231
Ph3				0.8169		0.2959
Ph4				0.6895		0.5028
CC1					0.7407	0.4362
CC2					0.8260	0.2996
CC3					0.8438	0.2654
CC4					0.6401	0.5232
Rotated factor loadings (pattern matrix) and unique variances for dependent variables						
Pd1	0.8303					0.3106
Pd2	0.8038					0.3539
Pd3	0.8197					0.3281

(blanks represent abs(loading)<.3)

Source: Authors' calculation from Stata 15.0

Testing the appropriateness of the model and regression analysis

Kaiser-Meyer-Olkin Measure of Sampling Adequacy with KMO = 0.761. The result of testing the appropriateness of the model by Kaiser-Meyer-Olkin Measure of Sampling Adequacy find out coefficient KMO reach 0.761 that is greater 0,05. Therefore, the model was suitable for this study. The analysis results of the correlation between variables in the model indicate a very low degree of correlation among the variables, the presence of any multicollinearity was neglected. According to the results of regression analysis, P-values was less than the significance level of 5% (P-value = 0.000), so the regression model was statistically significant at the significance level of 5 %. Variables x_1 , x_2 , x_3 , x_4 , and x_5 have positive effects on the variable y are all significant at the 1% level as shown in Table 7.

Table VII Regression analysis

y	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
x_1	.0734249	.0211334	3.47	0.001	.0319604	.1148894
x_2	.4936059	.0211334	23.36	0.000	.4521414	.5350704
x_3	.2737733	.0211334	12.95	0.000	.2323088	.3152378
x_4	.1591817	.0211334	7.53	0.000	.1177172	.2006461
x_5	.3726184	.0211334	17.63	0.000	.3311539	.4140829
_cons	1.1408	.0211242	0.00	1.000	-.0414465	.0414465

Source: Authors' calculation from Stata 15.0

The multicollinearity test of the model with Mean VIF 1.00, this result shows no serious multicollinearity in this model. Test for variance change of the model, P-value = 0.0000 was smaller than 0.05, therefore, this model had variance change phenomenon. So that, the study must be overcome the variance change phenomenon (Table.8).

Table VIII Regression analysis (after overcome the variance change)

y	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
x ₁	.0734249	.028251	2.60	0.009	.0179955	.1288544
x ₂	.4936059	.0200126	24.66	0.000	.4543406	.5328713
x ₃	.2737733	.0246986	11.08	0.000	.2253137	.3222329
x ₄	.1591817	.0194611	8.18	0.000	.1209983	.197365
x ₅	.3726184	.0197808	18.84	0.000	.3338077	.4114291
_cons	1.1408	.0211242	0.00	1.000	-.0414465	.0414465

Source: Authors' calculation from Stata 15.0

After overcoming the variance change phenomenon, the results show that variable x₁ has positive effects on the variable y at the 5% level. Variables x₂, x₃, x₄, and x₅ have positive effects on the variable y are all significant at the 1% level as shown in Table 9.

Table IX The estimation results for factors affecting disease prevention

Independent variables	Dependent variable (y)
x ₁	0.0734** (2.60)
x ₂	0.494*** (24.66)
x ₃	0.274*** (11.08)
x ₄	0.159*** (8.18)
x ₅	0.373*** (18.84)
_cons	1.1408 (0.00)
P-value	0.0000
N	1152

Source: Authors' calculation from Stata 15.0

The research found out the regression equation of this study was as follows.

$$y = 1.1408 + 0.0734 x_1 + 0.494 x_2 + 0.274 x_3 + 0.159 x_4 + 0.373 x_5$$

4. DISCUSSION

As shown in table 9, correlations and multiple regression techniques proved that management policy had a positive impact on disease prevention with coefficient 0.0734, and the significance level of 5%. This showed that the PHFs focus more attuned to disease prevention and risk factor management and conduct the healthy policies that have an impact on the entire patients are needed to minimize the harmful effects of many disease. The PHFs' management policy need to be more targeted towards the need of people, and not only to the physiological parameters, in order to have a more substantial and lasting impact on health. The quality strategies already applied in the PHFs are applicable to health promotion, and methods to incorporate health promotion as a core principle in the PHFs. At the same time, the PHFs enhance responsibilities for the process of implementation, evaluation of the policy, ensure the availability of procedures for collection and evaluation of data in order to monitor the quality of health promotion activities, and ensure all resource including human resource, space, equipment, etc. in order to implement health promotion activities. Thereby, the PHFs contribute to increase the disease prevention.

Based on the multiple regression model, patient information and intervention were found to be significant in explaining disease prevention with coefficient 0.494, and statistically significant at 1% level. The factor of patient information and intervention contribute to advance the disease prevention through the PHFs integrate health promotion in clinical activity, and it makes more sense to ensure that health promotion is systematically offered to all patients based on assessed needs; they ensure that all patients, staff and visitors have access to general information on factors influencing health; the information is given clear, understandable and appropriate about their actual condition, treatment, care and factors influencing the patients' health; and the PHFs performed efficient exchange of information, relevant information was rapidly, accurately, and efficiently transferred, and ensured the best level of health promotion that increased the potential for disease prevention and health service success.

The outcome of the regression analysis proved patient assessment had a coefficient 0.274 with the significance level of 1%. The PHFs ensure the availability of procedures for all patients to assess the need for health promotion, and they could streamline administrative procedures, and create major innovations in the management of the health care services to facilitate the patients used easier health care services. Thereby, the PHFs contribute to promote the disease prevention.

Indeed, promoting a healthy workplace may be the most fruitful ways to enhance the disease prevention when the result study showed that promoting a healthy workplace had a positive impact on the disease prevention with coefficient 0.159, and the significance level of 1%. The PHFs ensure the establishment and implementation of a comprehensive human resource strategy that includes the development and training of staff in health promotion skills, and training in the field of clinically related health promotion. At the same time, the health promotion aiming at a healthy and safe work environment, The PHFs created a positive workings environment which would have a positive effect on clinical outcomes, improved the patient experience and disease prevent.

The findings also revealed that continuity and cooperation had a strong impact on the disease prevention with coefficient 0.373, and the significance level of 1%. This showed the PHFs contribute to increase the disease prevention through they ensure that health promotion services are coherent with current provisions and health plans; the PHFs promote the health of patients, the health of staff, orient the operations to a health promoting setting, and promote the health of the community in the area of the PHFs; the PHFs ensure that the documentation and patient information is communicated to the relevant recipient or follow-up partners; and the PHFs does not only provide high quality comprehensive health services, but also develops a health promoting physical environment, and actively cooperates with health and social care providers, and with its community.

5. CONCLUSIONS

This study purpose was to test the effect of health promotion on disease prevention at The PHFs. The study proved there was an impact of health promotion on disease prevention. the management policy, patient assessment, patient information and intervention, promoting a healthy workplace, and continuity and cooperation had positive and the greatest influence on disease prevention. This study has some important managerial implications, it provides recommendations and feasible solutions for maintaining and improving the disease prevention. At the same time, the study results help the PHFs' managers to develop their skills and expertise, and may determine the importance of attributes in the health promotion. The below suggestions and recommendations are expected to be applied in order to gain the disease prevention from the health promotion.

Firstly, the PHFs should establish health promotion policy and combine diverse complementary approaches, including counselling services, education and support for health promotion as an

integrated part of the individual patient pathway as well as for the health workforce. There has to be clear commitment by the PHFs' top management towards health promotion. There should be a formulated health promotion strategic policy document, specifying aims, goals, targets and health promotion strategies, and policies to reach them. The influence of the PHFs on the health of health workforce has to be taken into account by the general policy of the PHFs. This is not only in the interest of health workforce and general health policy, but also of value to the PHFs for the disease prevention. Effect of a health promotion policy in the PHFs is based upon the need of people, and not only to the physiological parameters, in order to have a more substantial and lasting impact on health, and methods to incorporate health promotion as a core principle in the PHFs.

Secondly, the PHFs should re-orient their health care policies, the health promotion has to be an explicit aim and value in the mission statement of the PHFs. Accordingly, the role of the health care services should move increasingly in a health promotion direction, beyond its responsibility for providing clinical and curative services. On the other hand, they also need to strengthen the actions for community health, and to develop the operations for strengthening public participation in the health promotion.

Thirdly, the PHFs should consider the reorientation of health services that requires stronger attention to the health promotion research, as well as changes in professional education, instruction and training for the health workforce. They also need to create many favorable conditions for people to learn and understand the health promotion to cope with chronic illness and injuries is essential.

Fourthly, the PHFs should create supportive environments for health, and must be addressed in their health promotion policy and strategy. At the same time the PHFs should develop the facilities into a health promoting for the community, and consider the PHFs as a material and the social setting that has not only effects on the health of the health workforce and patients within its premises, but also on people living and working in the neighborhood.

Fifthly, the PHFs should committed themselves to integrate health promotion in daily activities. They need to link the health promoting activities with continuous quality improvement programs. The process of clinical care and health promotion should be considered as a top priority for PHFs leaders. These processes are done clearly, the health care services are provided quickly and promptly, respond to patients' health status immediately. The PHFs should focus on the collecting subjective and objective information, assess the collected data; create, perform, and supervise the care and health promotion plans to facilitate the effective disease prevention.

Sixthly, in response to the rapid change in the needs of disease prevention, the PHFs need invariably involved in institutional reform and organizational re-engineering by actively strengthening internal quality enhancement, external marketing, communication strategies expanding to boost the health promotion. The PHFs should provide modern information systems to facilitate better communication that allow people to communicate quickly, effectively, and safely in the disease prevention. Accordingly, the PHFs should focus on client centeredness, safety, and quality improvement; they should focus on health in a holistic perspective and not only on curative services, perform cooperation, and create as close links as possible with other levels of the health care system and the community to advance the disease prevention.

REFERENCES

- [1] Groene O, Garcia-Barbero M. Health promotion in hospitals: evidence and quality management. 2005.
- [2] Starfield B, Hyde J, Gervas J, Heath I. The concept of prevention: a good idea gone astray? Journal of Epidemiology & Community Health. 2008;62(7):580-3.

- [3] Green SB. How many subjects does it take to do a regression analysis. *Multivariate behavioral research*. 1991;26(3):499-510.
- [4] Hair JF, Black WC, Babin BJ, Anderson RE, Tatham R. *Multivariate data analysis* . Uppersaddle River. NJ: Pearson Prentice Hall; 2006.
- [5] Tabachnick BG, Fidell LS, Ullman JB. *Using multivariate statistics*: Pearson Boston, MA; 2007.
- [6] Ratner B. The correlation coefficient: Its values range between+ 1/- 1, or do they? *Journal of targeting, measurement and analysis for marketing*. 2009;17(2):139-42.
- [7] Hulin C, Netemeyer R, Cudeck R. Can a reliability coefficient be too high? *Journal of Consumer Psychology*. 2001;10(1/2):55-8.